WA 15 (DOER FFF Demonstration Project)

Background

In 2019 Brookline passed WA 21 requiring all new construction and substantial renovations to be all-electric and fossil fuel free. However, the Attorney General's Office (AGO) did not approve our Bylaw because it conflicted with State laws. Subsequently, in 2020, Brookline passed a Home Rule Petition requesting authority from the State Legislature to be able to enforce this Bylaw. Brookline also passed two zoning Bylaws in 2021 asking for the same authority through different legal mechanisms.

All four of these Warrant Articles addressing fossil fuel free construction passed in Town Meeting with near unanimous votes and yet Brookline has been unable to enforce Fossil Fuel Free construction due to conflicts with State law.

In response to growing demand from multiple communities throughout the State, in 2022 our State legislature developed a **Demonstration Project** through the Department of Energy Resources (DOER) to allow **10 communities to enact requirements that building construction be Fossil Fuel Free.**

The project is currently limited to the first 10 municipalities who filed Home Rule Petitions with the legislature. These communities are Arlington, Lexington, Brookline, Acton, Concord, Lincoln, Cambridge, Newton, West Tisbury, and Aquinnah. Four additional communities - Boston, Somerville, Salem, and Northampton - have also passed Home Rule Petitions and are currently on a waitlist to get into this project.

WA 15 will allow us to enter the 10 Community Fossil Fuel Free Demonstration Project.

In order to participate in the Demonstration Project, DOER has determined that all of the 10 selected communities have to pass new Bylaws, since our prior ones were disallowed by the AGO for conflicting with State law. Our new Bylaw will not be disallowed by the AGO because State law changed with the creation of this Demonstration Project.

Three of the ten prioritized communities have already passed similar WAs in their 2023 Spring Town Meetings: Lincoln, Lexington and Acton. Aquinnah is also lined up to pass a similar WA for its Spring Town Meeting.

WA 15 follows DOER's "Model Rule"

DOER has proposed a recommended Bylaw for us to adopt called the Model Rule. Warrant Article 15 uses the proposed language from DOER with one exception: eliminating a proposed exemption for biomass heating.

WA 15 is very close to what Brookline has passed previously.

Compared to our previous Fossil Fuel Free Warrant Articles, WA 15 accomplishes the same goal, but in a simpler manner.

WA 15 simply alters the existing Specialized Code (which Brookline adopted in January 2023) by eliminating the pathways that allow fossil fuels, leaving the remaining all-electric pathway.

The major difference compared to Brookline's prior Fossil Fuel Free Warrant Articles is that WA 15 (and the proposed Model Rule) does not provide an exemption for gas cooking.

Amendments.

After bringing WA 15 to ZEAB and later to the Advisory Committee, the Planning Department worked with the Building Commissioner and Town Counsel to make amendments that bring it closer in line with Brookline's previous Fossil Fuel Free Warrant Articles, while still closely following DOER's Model Rule.

Most notably, the amendments ensure that an entire building, not an individual unit within a building, has to undergo >50% renovation for this WA to take effect. The amendment also provides a waiver and appeals process.

WA 15 will improve health outcomes and health equity.

Poor air quality from burning fossil fuels in our buildings is associated with higher rates of disease and death throughout the Commonwealth. As advocates for safer indoor air quality in public housing in the Bronx recently noted, "Everyone deserves to live in a healthy home."

Gas appliances are associated with an increased risk of asthma development in children. In Massachusetts, **1 in 8 children have an asthma diagnosis**. Gas stoves are attributable to about 15% of childhood asthma in the Commonwealth, equal to having a smoker in the home. Gas appliances release high levels of nitrogen dioxide, carbon monoxide, methane, formaldehyde and benzene, producing indoor air quality that is not allowed outdoors under the Clean Air Act.

WA 15 will reduce costs to build and live in Brookline, and will protect our town from costly retrofits.

According to DOER's own data, all-electric buildings have the lowest building costs as well as operational costs across all project types when compared with gas. The costs in the chart below are compared to the costs under the Base code. It is clear that all-electric is less expensive than building with gas.

Building type	Incremental cost to build			Incremental cost to operate		
	Electric	Gas	**Electricity edge**	Electric	Gas	**Electricity edge**
Large 1-family	- $20,062	+ $3,183	**$23,245**	- $548	- $302	**$246**
Small 1-family	- $28,597	+ $7,907	**$36,504**	- $1,053	+ $496	**$1,549**
Townhouse	- $11,938	+ $802	**$12,740**	- $335	+ $21	**$356**
6-family	- $15,690	+ $2,277	**$17,967**	- $683	- $14	**$669**

From https://www.mass.gov/doc/summary-of-stretch-code-study-energy-efficiency-analysis-feb-2022/download
Summary pages 13-14, detail pages 16-32

Additional studies confirm DOERs data that construction and operational costs of efficient all-electric homes are already similar to or lower than their fossil fuel counterparts. All-electric building technology is also mainstream and well-established for commercial construction.

Brookline's Housing Authority and seven permitted 40Bs are already going all-electric without being required to do so because it is cost effective, even though there is not yet a legal requirement to do so.

Continuing to allow the installation of new fossil fuel infrastructure results in future displacement as well as far greater costs, since buildings must be retrofitted at some point down the line in order to achieve the goals of Massachusetts' Clean Energy and Climate Plan.

In short, it is fiscally irresponsible to be installing new gas infrastructure when the State has a legally binding target to eliminate fossil fuels from half of our buildings by 2030.

WA 15 will help us meet our climate goals.

The State has a legally binding obligation to reduce emissions 50% by 2030 and to be 100% net zero by 2050. Brookline has committed to net-zero by 2040.

It is impossible to meet our climate mandates without widespread building electrification. See Massachusetts 2050 Decarbonization Roadmap (pages 44-54). The Commission on Clean Heat came to the same conclusion, as did the Carbon Free Boston report.

WA 15 will not overburden the electric grid.

The proposed fossil fuel free (FFF) demonstration project, WA-15, affects only *new and major construction*, comprising about 0.5% of building emissions per year, and has virtually no impact on the State grid.

If adopted by the first 10 communities, which comprise less than 6% of the State's population, the effect on the grid would be 0.03% per year - in other words, negligible. If also adopted by the four waitlist communities (including Boston at 10% of the State's population, Somerville, Salem, and Northampton), the gross population affected jumps to 17%, resulting in 0.085% added burden on the grid. If adopted by the entire State, as we hope will happen soon, the impact will be 0.5%. Even this figure isn't accurate, however, because some of that added electrification is inevitable, as new and major construction ADDS electrical burden *regardless of heating type*.

In addition, heat pumps are far more efficient than traditional HVAC - two to five times more efficient - and the new building code standards also produce much more efficient buildings.

Lastly, building electrification is REQUIRED and MANDATED by the State in order to meet our climate targets, far above and beyond the new construction covered in this Warrant Article, as we need to reduce our carbon emissions by 50% in the next seven years in order to keep below 2 degrees Centigrade warming.

Other Electrical Facts:

- **Brookline Basic Green** https://brooklinegreen.com/ **is 90% renewable (going to 100% in 2024) and currently 63% the cost of Eversource.**
- **Modern electric heat is efficient and cost-effective.** Newly electrified heating systems employ heat pump technology, which is 2 to 5 times more efficient than gas boilers and furnaces and is used all over the world, including over 30 million square feet of net-zero construction already built in Massachusetts.
- **Fossil fuel backup heat is unnecessary**. Heat pumps operate efficiently down to -15 degrees F and have been proven by MassCEC not to need fossil fuel backup systems.
- **Electrification reduces input energy needs**. The efficiency gain alone due to switching from fossil fuel to electric vehicles and all-electric appliances almost cuts in half the amount of raw energy needed to fuel the economy.

- **Electricity is increasingly carbon-free**. Brookline's default electricity (Brookline Green) is 90% renewable today, and will be 100% in 2024. Furthermore, non-carbon-emitting energy sources currently serve over 50% of New England's overall electricity needs, and this is mandated to increase every year.
- **The grid is getting cleaner every year**. Beginning in 2024, the proportion of load served by renewables in Massachusetts will increase by 3% per year, and that is likely to accelerate quite a bit with legislation proposed to meet our state's greenhouse gas (GHG) emission objectives. The first large-scale offshore wind farm in North America is expected to be injecting power into New England's grid by December 2023. And remember Brookline's electricity is already 90% renewable through our Community Choice Aggregation program.
- **Carbon emissions-free energy could make up as much of 90% of total U.S. electricity generation by 2030** according to a US DOE report analyzing recent policy changes.
- **The grid has ample supply to accommodate the State's electrification plans.** New England is currently operating about 20% below the all-time system electric peak demand of 2006. According to the Director of Transmission System Planning at Eversource (see slides 47-54), the grid has ample supply to accommodate the State's electrification plans. Additionally, according to their forecasts, minimal infrastructure beyond what has already been planned will be needed by 2035.
- **Resource adequacy planned to double by 2050**. Planning by the regional electric grid operator, ISO New England, envisions doubling the region's current 25 gigawatt (GW) capacity to 50 GW by 2050.
- **Additional supply already in the queue.** Of the 25 GW of additional supply needed regionally, 10 GW will be here by 2035. *That is the business as usual scenario, and it involves very little change to our current transmission grid***.**
- **The cost of renewable energy has been consistently and dramatically dropping for several decades.** Fossil fuel prices are unstable and are projected to continue to increase, leaving people vulnerable to unpredictable energy bills.
- **Gas *delivery* charges will continue to rise**. In terms of gas delivery costs, the costs of our GSEP program are now estimated to reach at least $40 billion dollars. These increased delivery costs have already begun to hit ratepayers, and will accelerate the inevitable transition of our gas system to a stranded asset. We have one of the oldest and leakiest gas pipe infrastructure in the country, leaking methane (25-80 times more potent than carbon) at a prodigious rate, and causing poor air quality and associated poor health outcomes. We need a plan to transition off this dirty system.

- **Utility rate impact.** Again, this project applies only to new construction and major renovations—a relatively small number of buildings—so it would not impact utility rates, even if it were enacted state-wide. New and major construction constitutes only 0.25-0.5% of annual construction activity in Brookline.